

CLAIMS

What is claimed is:

- 1 1. A device for indicating a transition from below a threshold temperature to above the
2 threshold temperature, comprising:
3 a housing having a first surface, at least a portion of said first surface being of a first
4 color;
5 a first reactant located within said housing; and
6 a capsule containing a liquid and a second reactant, said capsule being located within said
7 housing;
8 wherein said liquid freezes at the threshold temperature and expands upon freezing;
9 wherein said first and said second reactants cooperate to produce a pigment upon mixing;
10 and
11 wherein said pigment is of a second color, said second color being different than said first
12 color.
- 1 2. The device of claim 1, wherein the threshold temperature is less than the temperature at
2 which water freezes.
- 1 3. The device of claim 1, wherein the threshold temperature is greater than the temperature
2 at which water freezes.
- 1 4. The device of claim 1, wherein said capsule is designed such that it will fracture due to
2 the expansion of said liquid upon freezing.

1 5. The device of claim 1, wherein one of said first and said second reactants is a nickel salt
2 and the other of said first and said second reactants is sodium dimethylglyoxime.

1 6. The device of claim 1, wherein said housing has a second surface opposite said first
2 surface, said second surface including a transparent portion for allowing one to view said first
3 surface.

1 7. The device of claim 1, wherein said housing has a third surface, said third surface having
2 an adhesive attached thereto for attaching said device to a product to be monitored.

1 8. The device of claim 1, wherein said capsule is designed such that it will melt at a
2 predetermined temperature.

1 9. A device for indicating a transition from below a threshold temperature to above the
2 threshold temperature, comprising:

3 a housing defining an interior, at least a portion of said interior being of a first color;

4 a first reactant located within said housing; and

5 a capsule containing a liquid and a second reactant, said capsule being located within said
6 interior of said housing;

7 wherein said liquid freezes at the threshold temperature and expands upon freezing;

8 wherein said first and said second reactants cooperate to produce a pigment upon mixing;

9 and

10 wherein said pigment is of a second color, said second color being different than said first
11 color.

1 10. The device of claim 9, wherein the threshold temperature is less than the temperature at
2 which water freezes.

1 11. The device of claim 9, wherein the threshold temperature is greater than the temperature
2 at which water freezes.

1 12. The device of claim 9, wherein one of said first and said second reactants is a nickel salt
2 and the other of said first and said second reactants is sodium dimethylglyoxime.

1 13. The device of claim 9, further comprising an adhesive for coupling said first reactant to
2 said interior of said housing.

1 14. The device of claim 9, wherein said capsule is designed such that it will melt at a
2 predetermined temperature.

1 15. A device for indicating a transition from below a threshold temperature to above the
2 threshold temperature, comprising:

3 a housing defining an interior, said interior being of a first color;

4 a capsule located within said interior of said housing, said capsule defining an interior
5 volume and containing a liquid and a first reactant within said volume, said capsule having an
6 exterior surface; and

7 a second reactant located on said exterior surface of said capsule;

8 wherein said liquid freezes at the threshold temperature and expands upon freezing;

9 wherein said first and said second reactants cooperate to produce a pigment upon mixing;

10 and

11 wherein said pigment is of a second color, said second color being different than said first
12 color.

1 16. The device of claim 15, wherein the threshold temperature is less than the temperature at
2 which water freezes.

1 17. The device of claim 15, wherein the threshold temperature is greater than the temperature
2 at which water freezes.

1 18. The device of claim 15, wherein one of said first and said second reactants is a nickel salt
2 and the other of said first and said second reactants is sodium dimethylglyoxime.

1 19. The device of claim 15, wherein said capsule is designed such that it will melt at a
2 predetermined temperature.

1 20. A dual indicating device, comprising:

2 a housing having a first surface, at least a portion of said first surface being of a first
3 color;

4 a capsule containing a liquid and a first reactant, said capsule being located within said
5 housing; and

6 a second reactant;

7 wherein said liquid freezes at a first predetermined temperature and expands upon
8 freezing;

9 wherein said capsule is designed such that it will fracture due to the expansion of said
10 liquid upon freezing;

11 wherein said capsule is designed such that it will melt at a second predetermined
12 temperature;

13 wherein said first and said second reactants cooperate to produce a pigment upon mixing;
14 and

15 wherein said pigment is of a second color, said second color being different than said first
16 color.

1 21. The device of claim 20, wherein said second reactant is located within said housing.

1 22. The device of claim 20, wherein said second reactant is located on an exterior surface of
2 said capsule.

1 23. The device of claim 20, wherein one of said first and said second reactants is a nickel salt
2 and the other of said first and said second reactants is sodium dimethylglyoxime.